FIG. 1

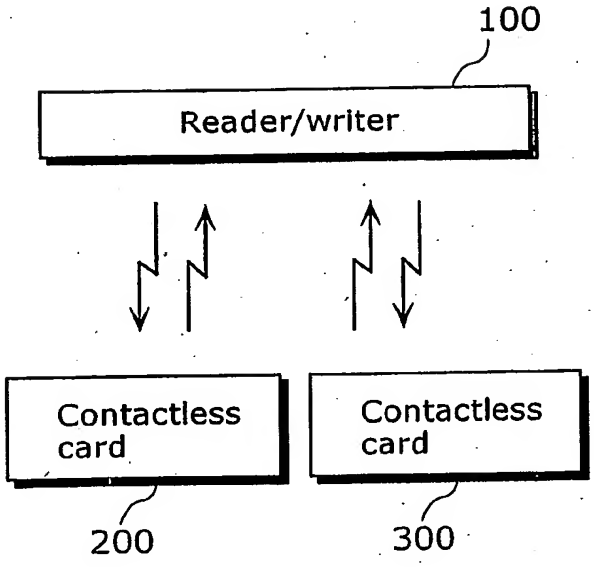
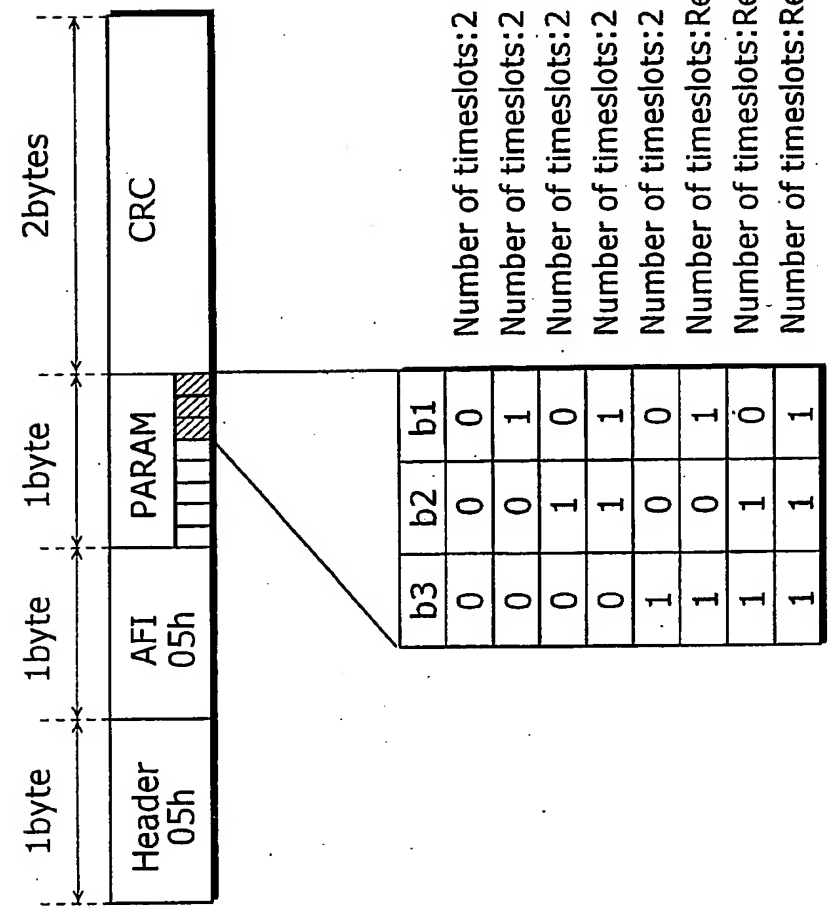

100
Reader/writer
Contactless card
Contactless card
200
300

FIG. 2

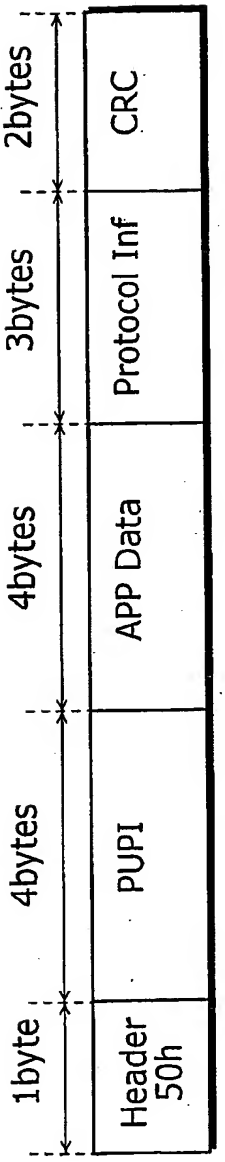


Header: Initial request command

AFI: Application class of contactless card (all classes)

CRC: CRC value from AP to PARAM

FIG. 3



Header: Initial response header

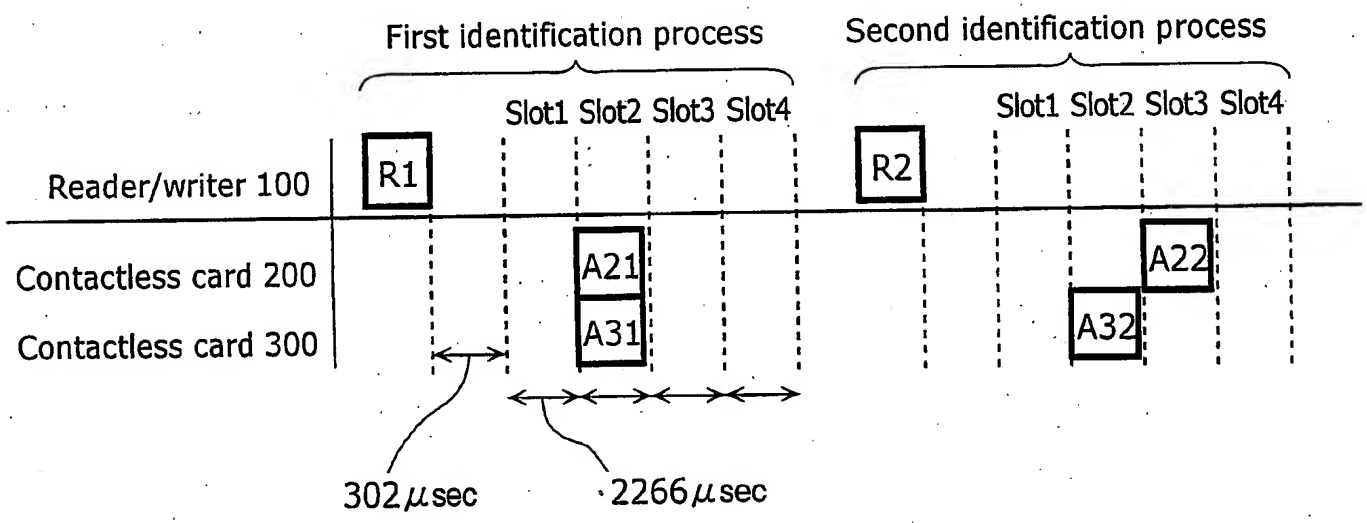
PUPI: Card ID (Pseudo-Unique PICC Identifier)

APP Data: Application information

Protocol Inf: Protocol information

CRC: CRC value from header to Protocol Inf

FIG. 4



R1, R2: Request command [REQB] (from reader/writer to contactless cards)

A21, A22: Initial response [ATQB] (from contactless card 200 to reader/writer 100)

A31, A32: Initial response [ATQB] (from contactless card 300 to reader/writer 100)

Slot1 to Slot4: Timeslot number

FIG. 5

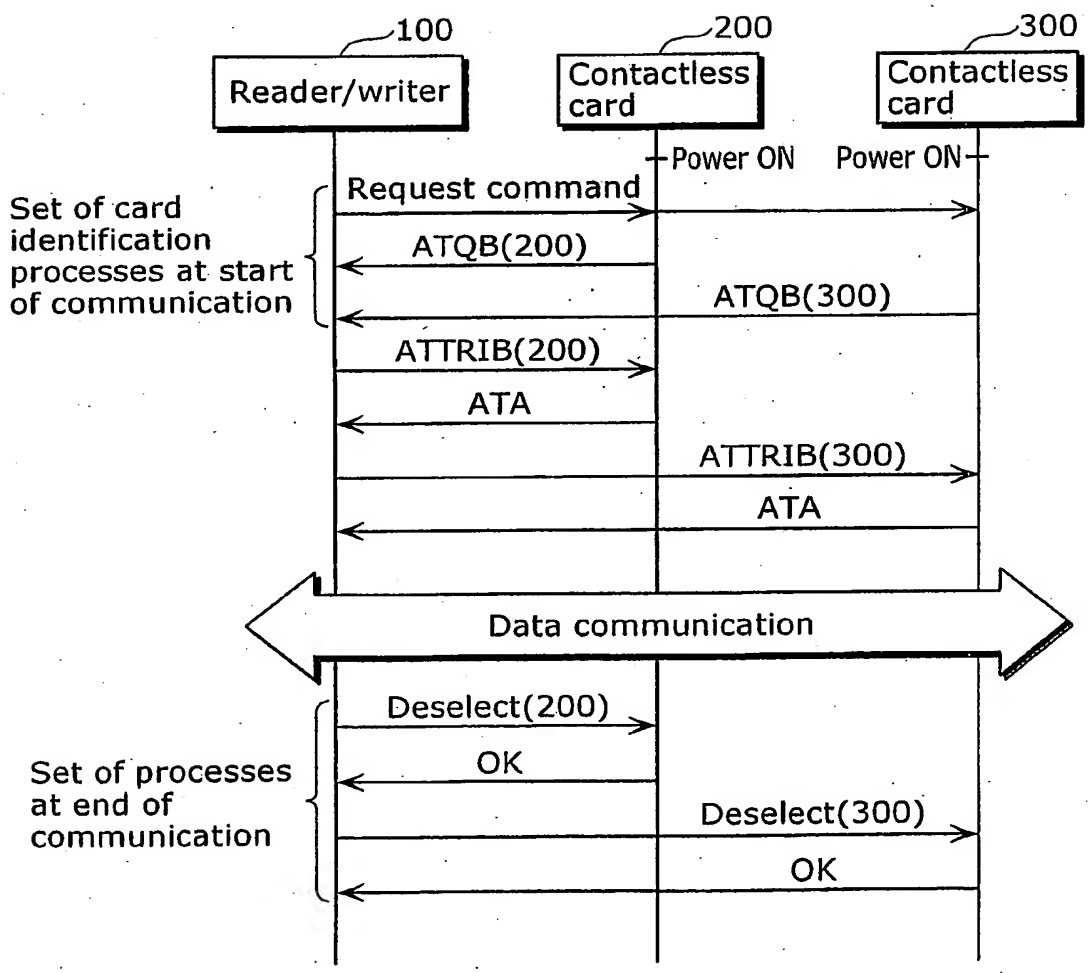

100
200
300
Reader/writer
Contactless card
Contactless card
Power ON
Power ON
Request command
Set of card identification processes at start of communication
ATQB(200)
ATQB(300)
ATTRIB(200)
ATA
ATTRIB(300)
ATA
Data communication
Deselect(200)
OK
Set of processes at end of communication
Deselect(300)
OK

FIG. 6

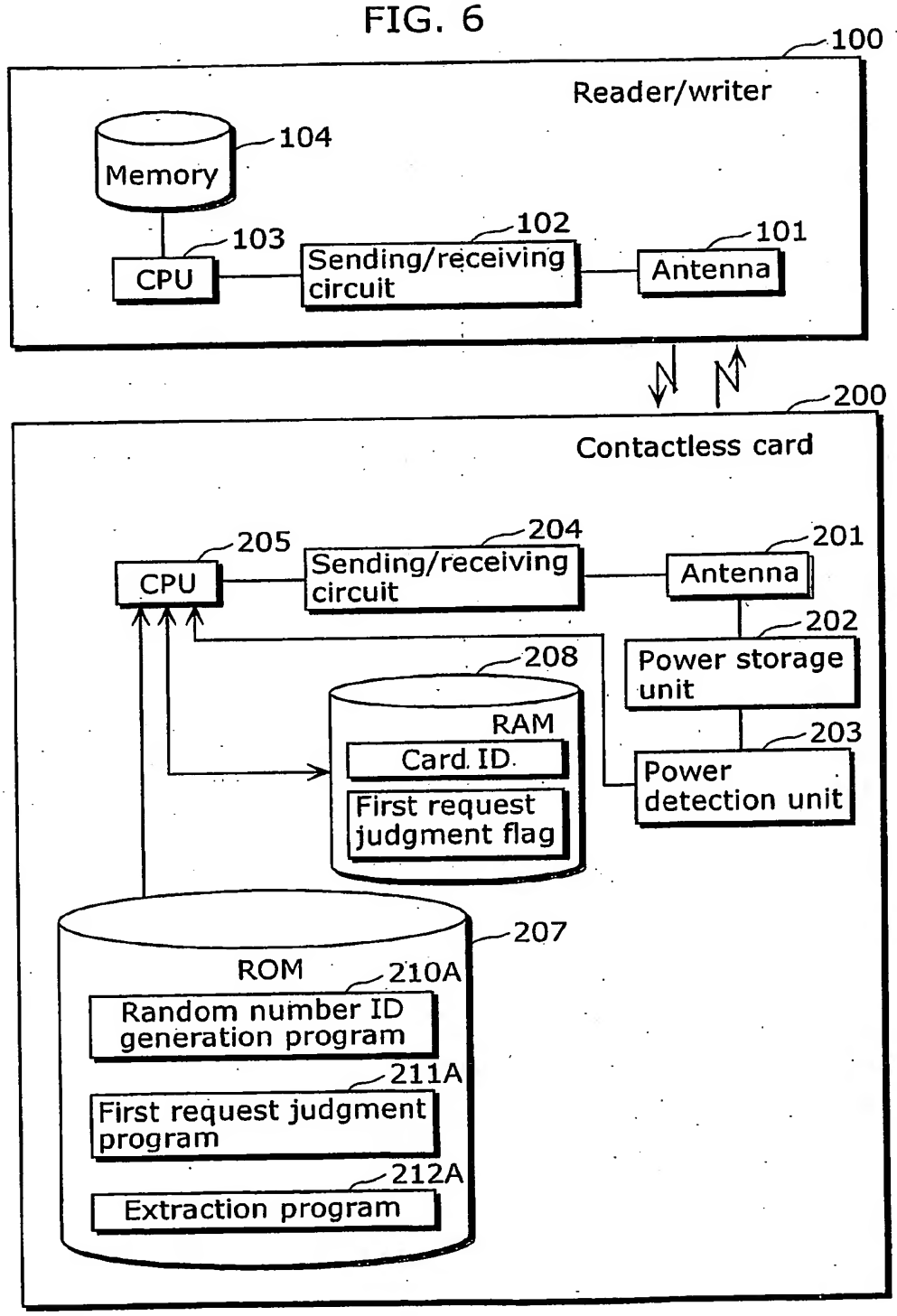

100
Reader/writer
104
Memory
103
CPU
102
Sending/receiving circuit
101
Antenna
200
Contactless card
205
CPU
204
Sending/receiving circuit
201
Antenna
202
Power storage unit
208
RAM
Card ID
First request judgment flag
203
Power detection unit
207
ROM
210A
Random number ID generation program
211A
First request judgment program
212A
Extraction program

FIG. 7

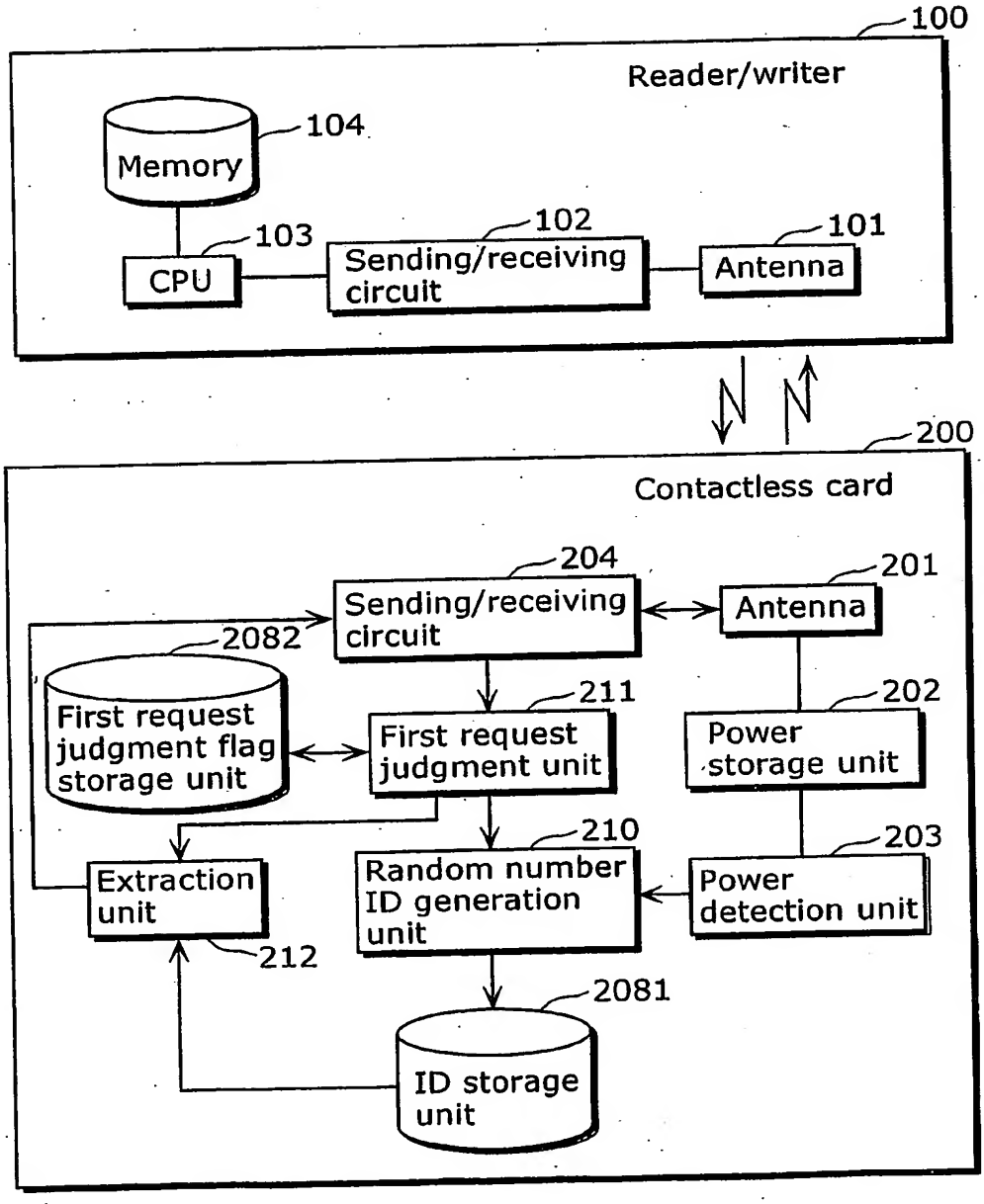

100
Reader/writer
Memory
104
CPU
103
Sending/receiving circuit
102
Antenna
101
200
Contactless card
204
Sending/receiving circuit
201
Antenna
2082
First request judgment flag storage unit
211
First request judgment unit
202
Power storage unit
210
Random number ID generation unit
203
Power detection unit
Extraction unit
212
2081
ID storage unit

FIG. 8

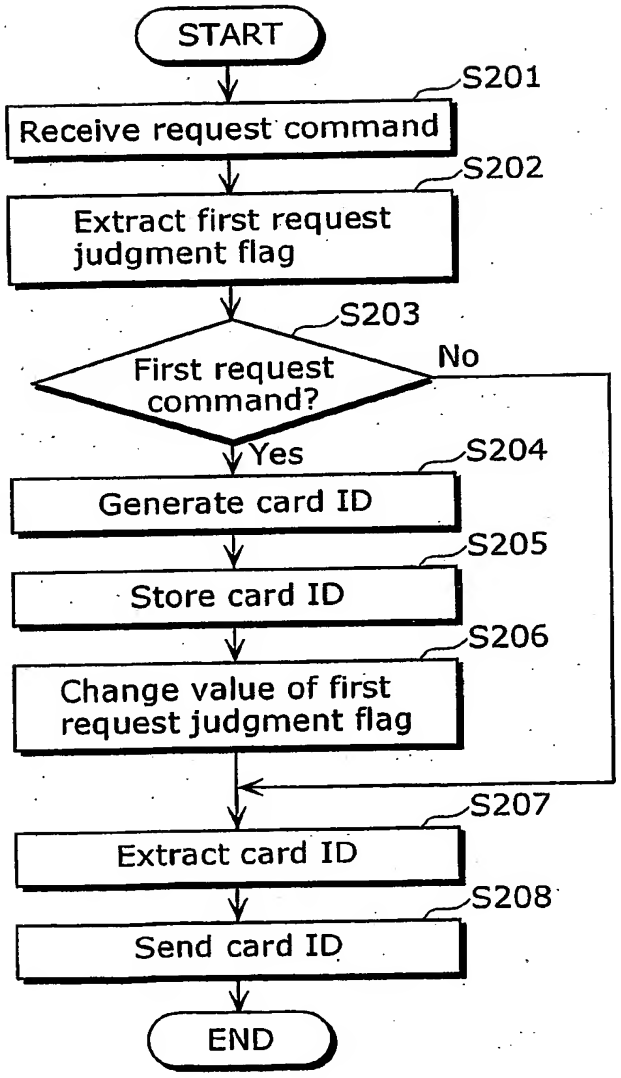

START
S201
Receive request command
S202
Extract first request judgment flag
S203
First request command?
No
Yes
S204
Generate card ID
S205
Store card ID
S206
Change value of first request judgment flag
S207
Extract card ID
S208
Send card ID
END

FIG. 9

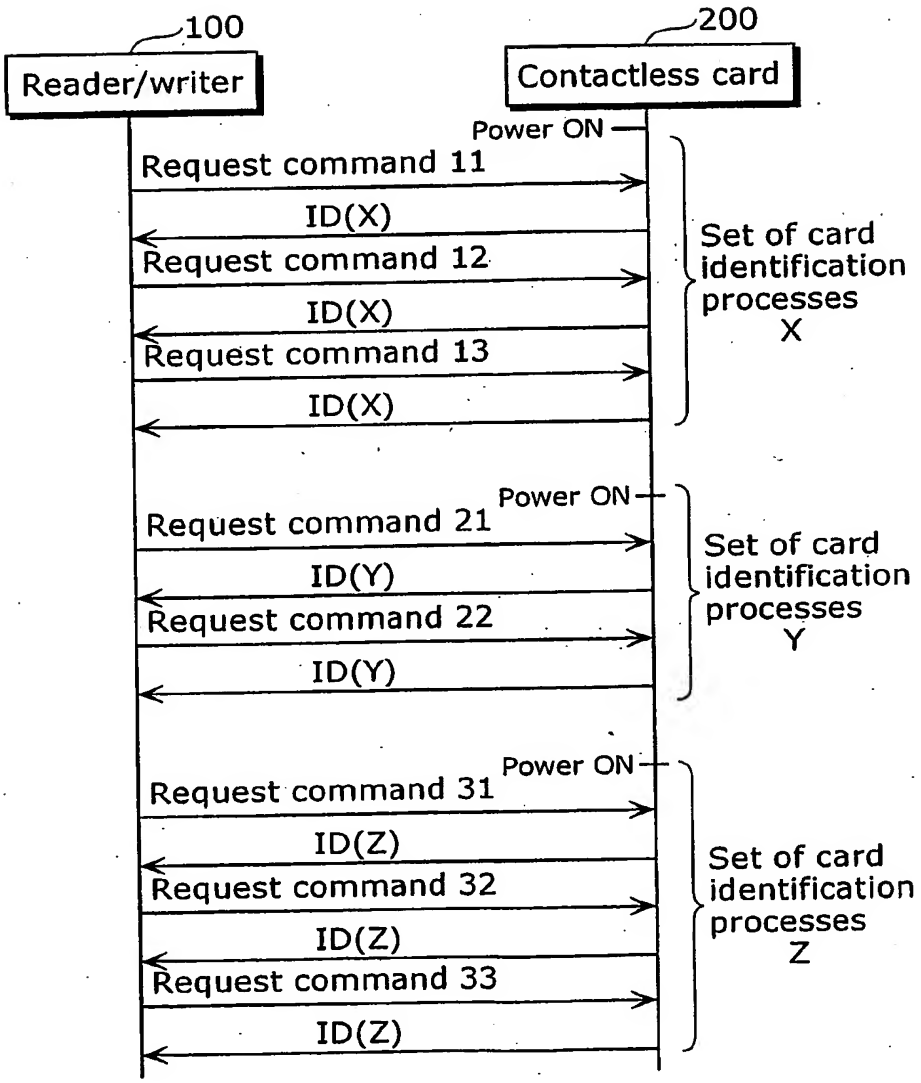

100
Reader/writer
200
Contactless card
Power ON
Request command 11
ID(X)
Request command 12
ID(X)
Request command 13
ID(X)
Set of card identification processes X
Power ON
Request command 21
ID(Y)
Request command 22
ID(Y)
Set of card identification processes Y
Power ON
Request command 31
ID(Z)
Request command 32
ID(Z)
Request command 33
ID(Z)
Set of card identification processes Z

FIG. 10

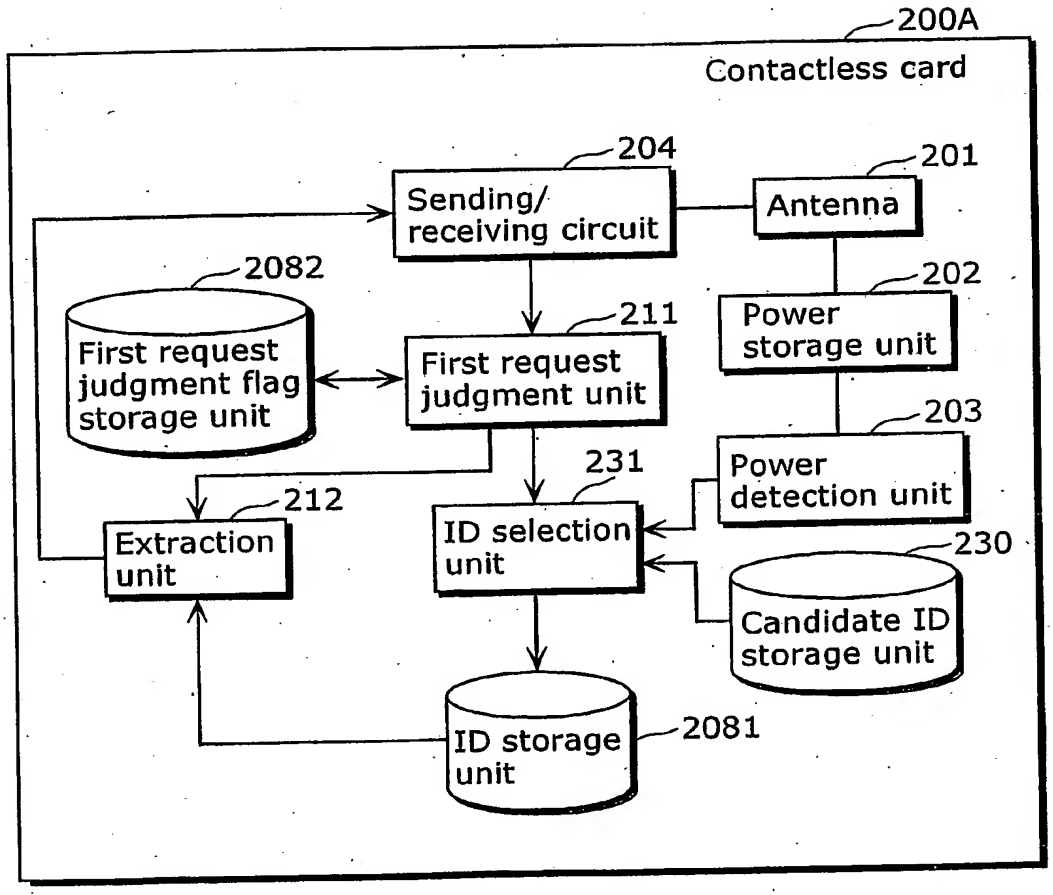

200A
Contactless card
204
Sending/ receiving circuit
201
Antenna
2082
First request judgment flag storage unit
211
First request judgment unit
202
Power storage unit
203
Power detection unit
231
ID selection unit
212
Extraction unit
230
Candidate ID storage unit
2081
ID storage unit

FIG. 11

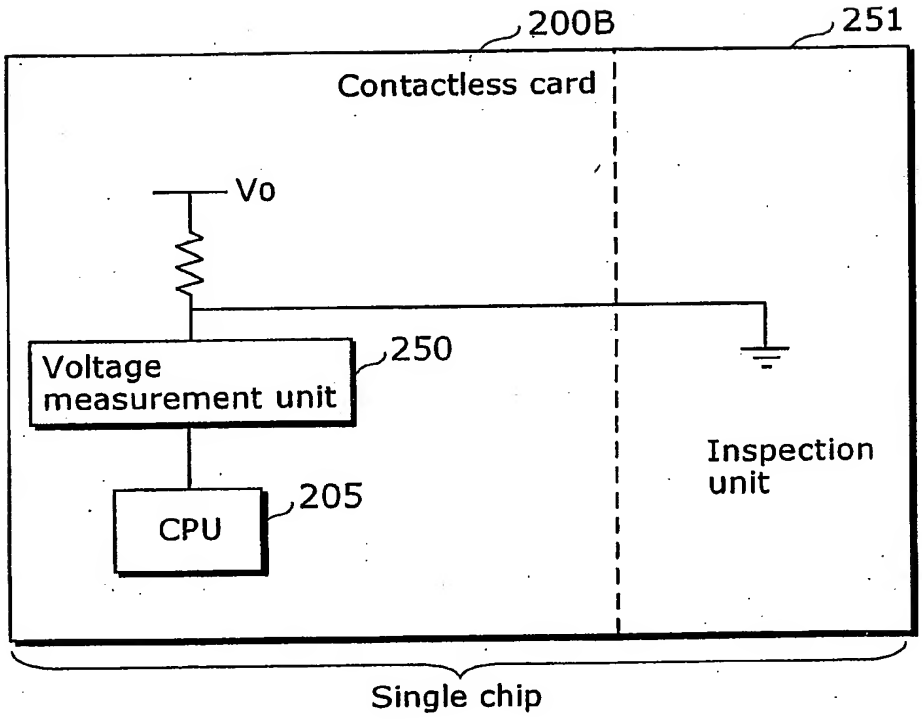

200B
251
Contactless card
Vo
Voltage measurement unit
250
CPU
205
Inspection unit
Single chip

FIG. 12

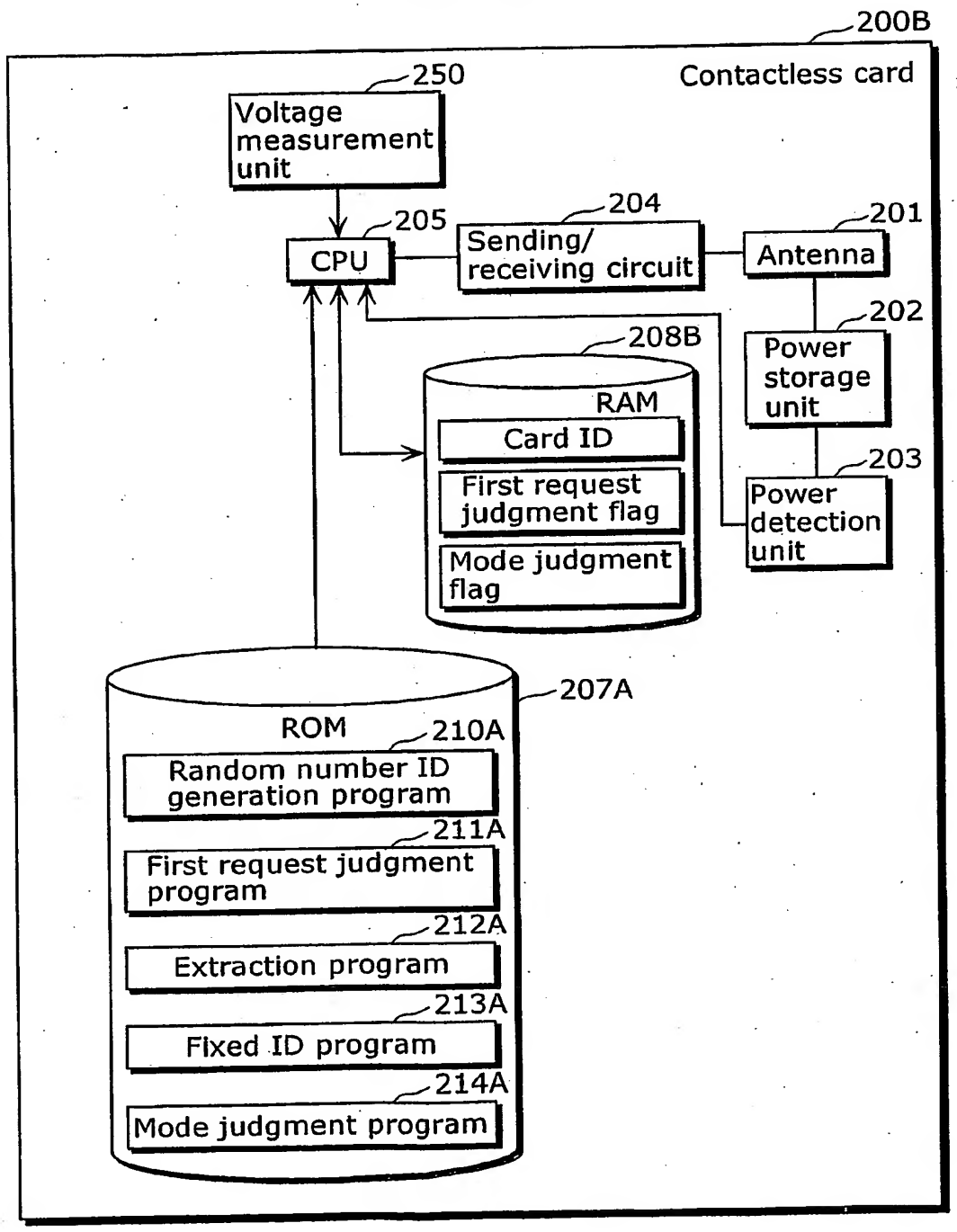

200B
Contactless card
250
Voltage measurement unit
205
CPU
204
Sending/ receiving circuit
201
Antenna
202
Power storage unit
203
Power detection unit
208B
RAM
Card ID
First request judgment flag
Mode judgment flag
207A
ROM
210A
Random number ID generation program
211A
First request judgment program
212A
Extraction program
213A
Fixed ID program
214A
Mode judgment program

FIG. 13

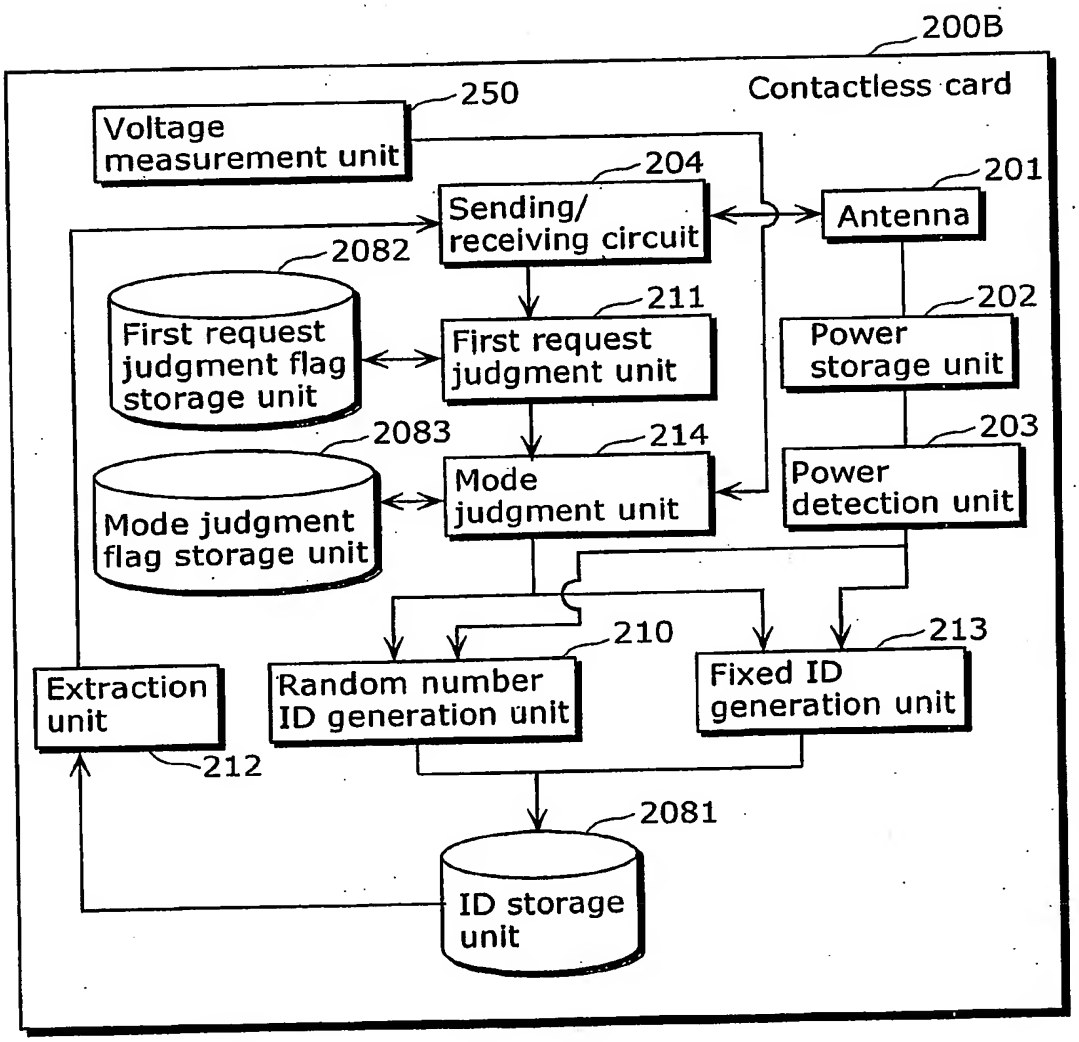

200B
Contactless card
250
Voltage measurement unit
204
Sending/ receiving circuit
201
Antenna
2082
First request judgment flag storage unit
211
First request judgment unit
202
Power storage unit
2083
Mode judgment flag storage unit
214
Mode judgment unit
203
Power detection unit
210
213
Extraction unit
Random number ID generation unit
Fixed ID generation unit
212
2081
ID storage unit

FIG. 14

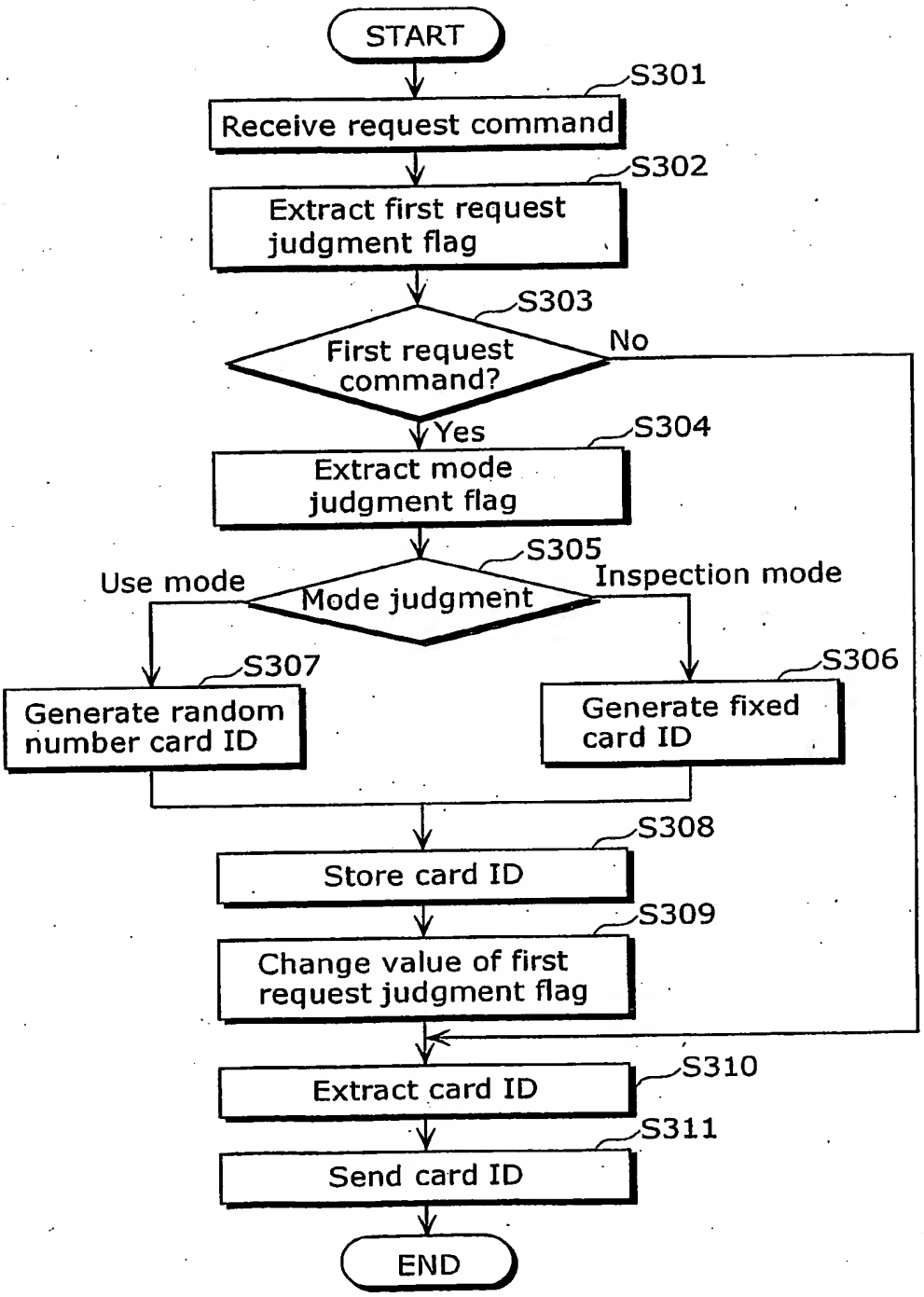

START
S301
Receive request command
S302
Extract first request judgment flag
S303
First request command?
No
Yes
S304
Extract mode judgment flag
S305
Mode judgment
Use mode
Inspection mode
S307
Generate random number card ID
S306
Generate fixed card ID
S308
Store card ID
S309
Change value of first request judgment flag
S310
Extract card ID
S311
Send card ID
END

FIG. 15

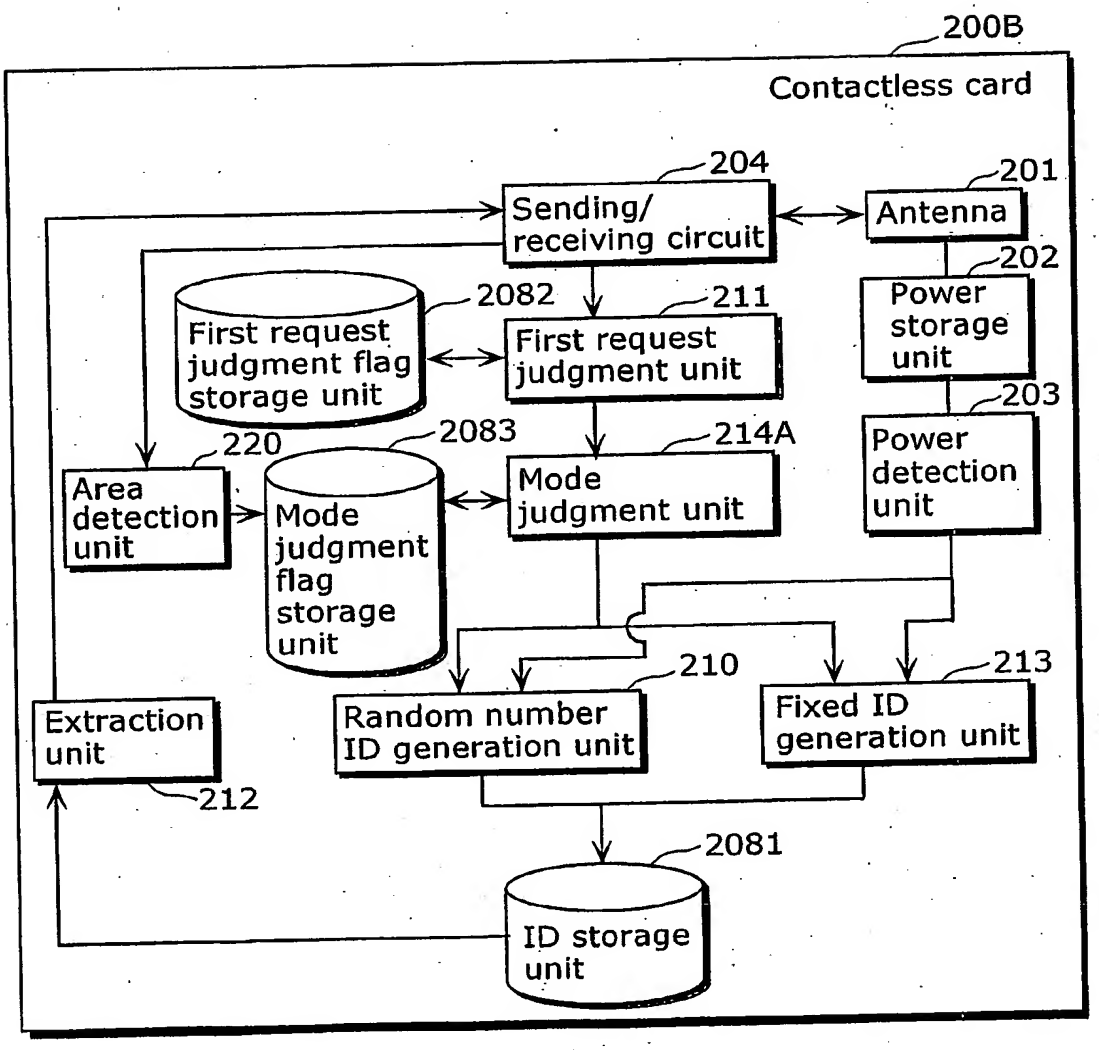

200B
Contactless card
204
Sending/ receiving circuit
201
Antenna
202
Power storage unit
203
Power detection unit
2082
First request judgment flag storage unit
211
First request judgment unit
220
Area detection unit
2083
Mode judgment flag storage unit
214A
Mode judgment unit
210
Random number ID generation unit
213
Fixed ID generation unit
Extraction unit
212
2081
ID storage unit

FIG. 16

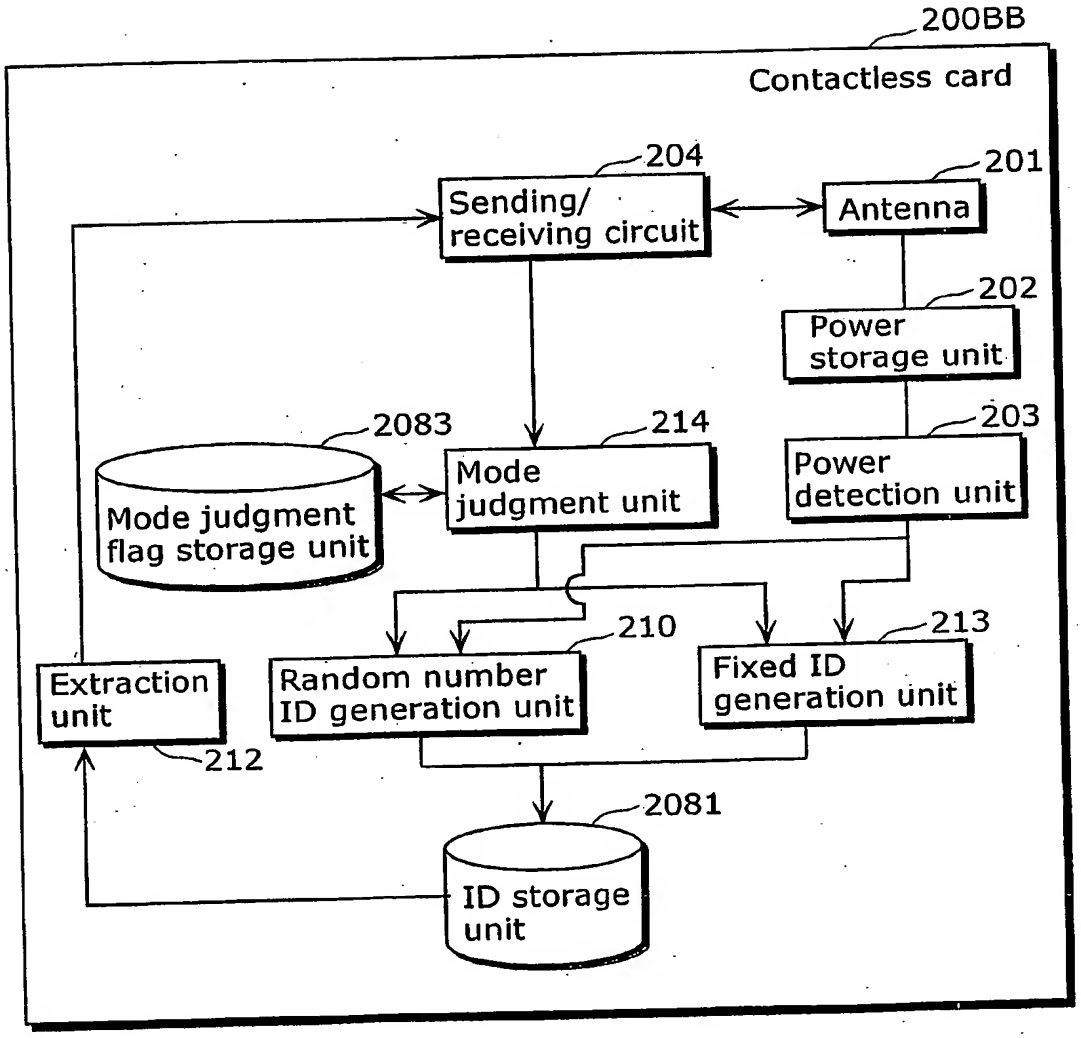

200BB
Contactless card
204
Sending/
receiving circuit
201
Antenna
202
Power
storage unit
2083
Mode judgment
flag storage unit
214
Mode
judgment unit
203
Power
detection unit
210
213
Extraction
unit
Random number
ID generation unit
Fixed ID
generation unit
212
2081
ID storage
unit

FIG. 17

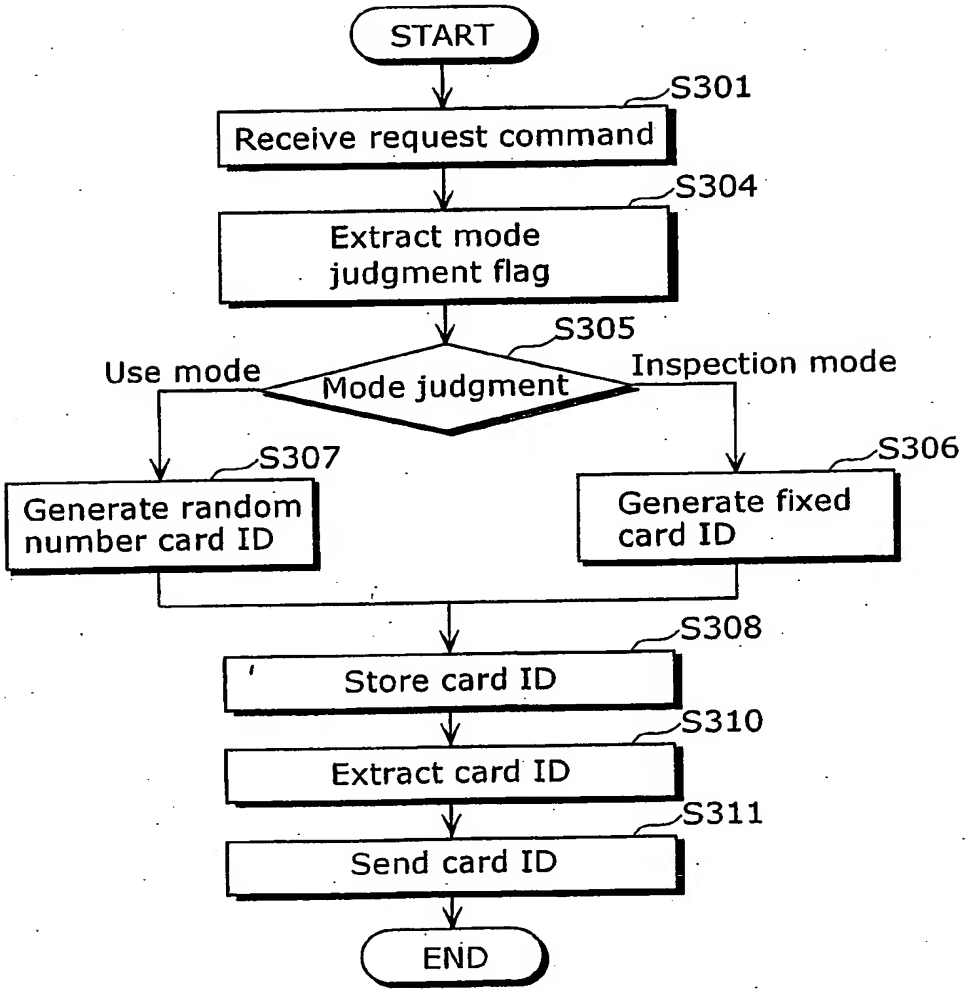

START
S301
Receive request command
S304
Extract mode judgment flag
S305
Use mode
Mode judgment
Inspection mode
S307
Generate random number card ID
S306
Generate fixed card ID
S308
Store card ID
S310
Extract card ID
S311
Send card ID
END

FIG. 18

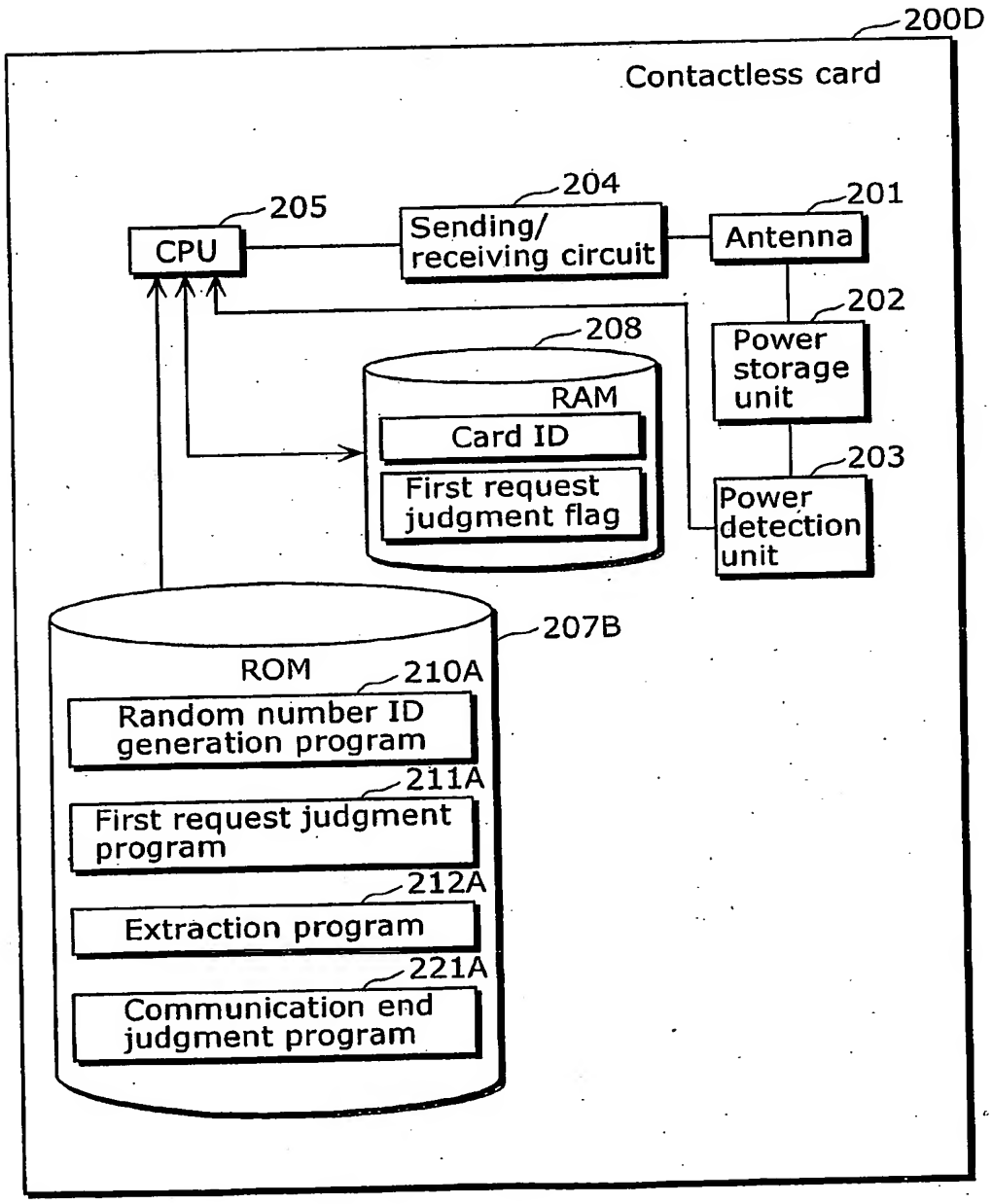

200D
Contactless card
205
CPU
204
Sending/
receiving circuit
201
Antenna
202
Power
storage
unit
208
RAM
Card ID
First request
judgment flag
203
Power
detection
unit
207B
ROM
210A
Random number ID
generation program
211A
First request judgment
program
212A
Extraction program
221A
Communication end
judgment program

FIG. 19

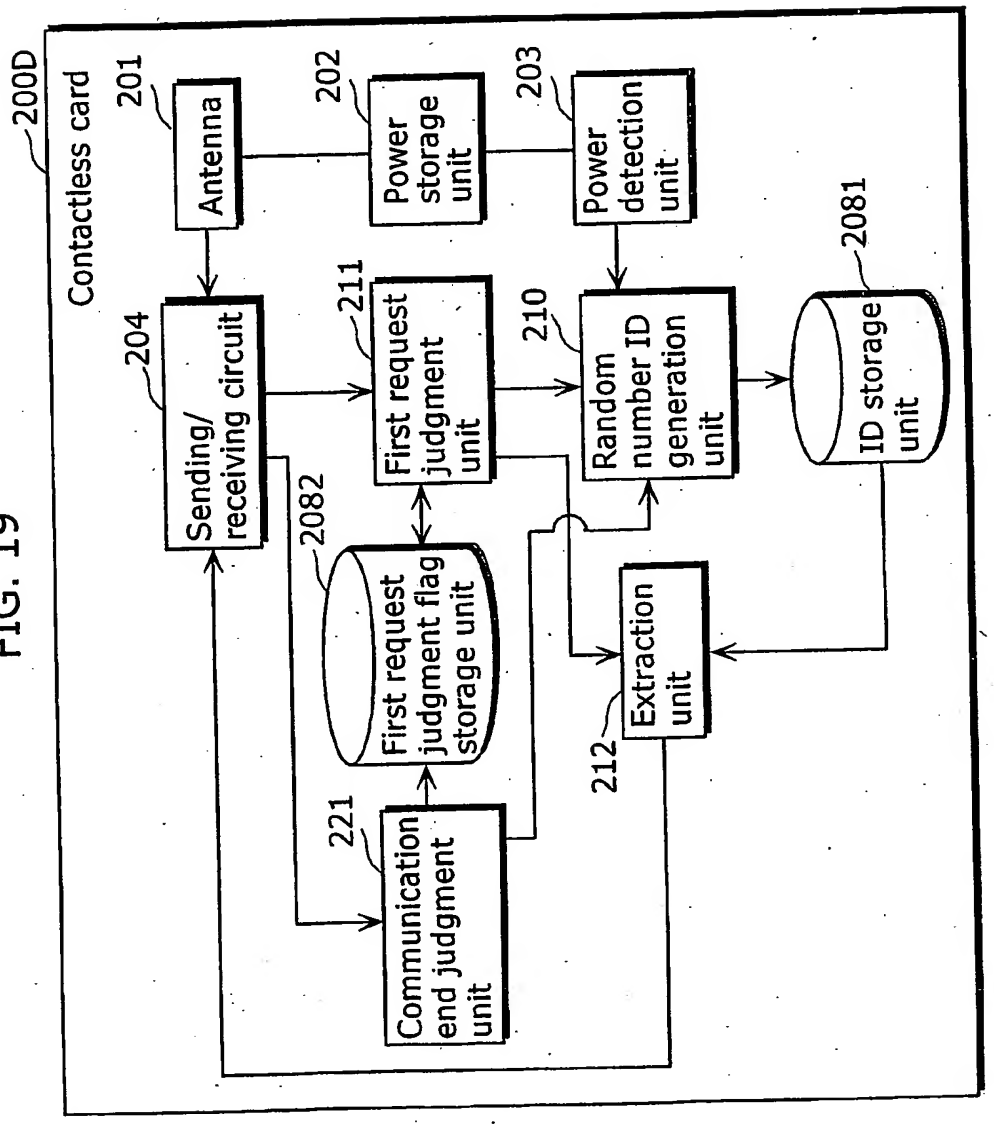

200D
Contactless card
201
Antenna
202
Power storage unit
203
Power detection unit
204
Sending/ receiving circuit
211
First request judgment unit
210
Random number ID generation unit
2081
ID storage unit
2082
First request judgment flag storage unit
212
Extraction unit
221
Communication end judgment unit

FIG. 20

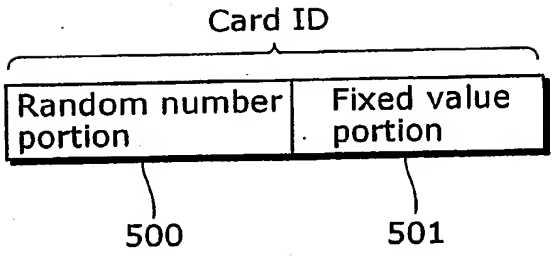


FIG. 21

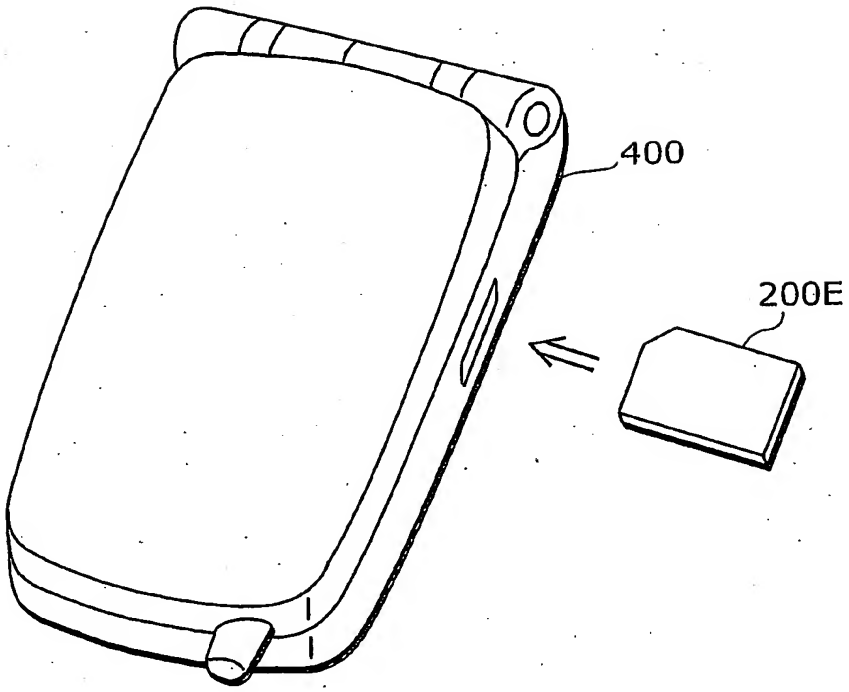


FIG. 22

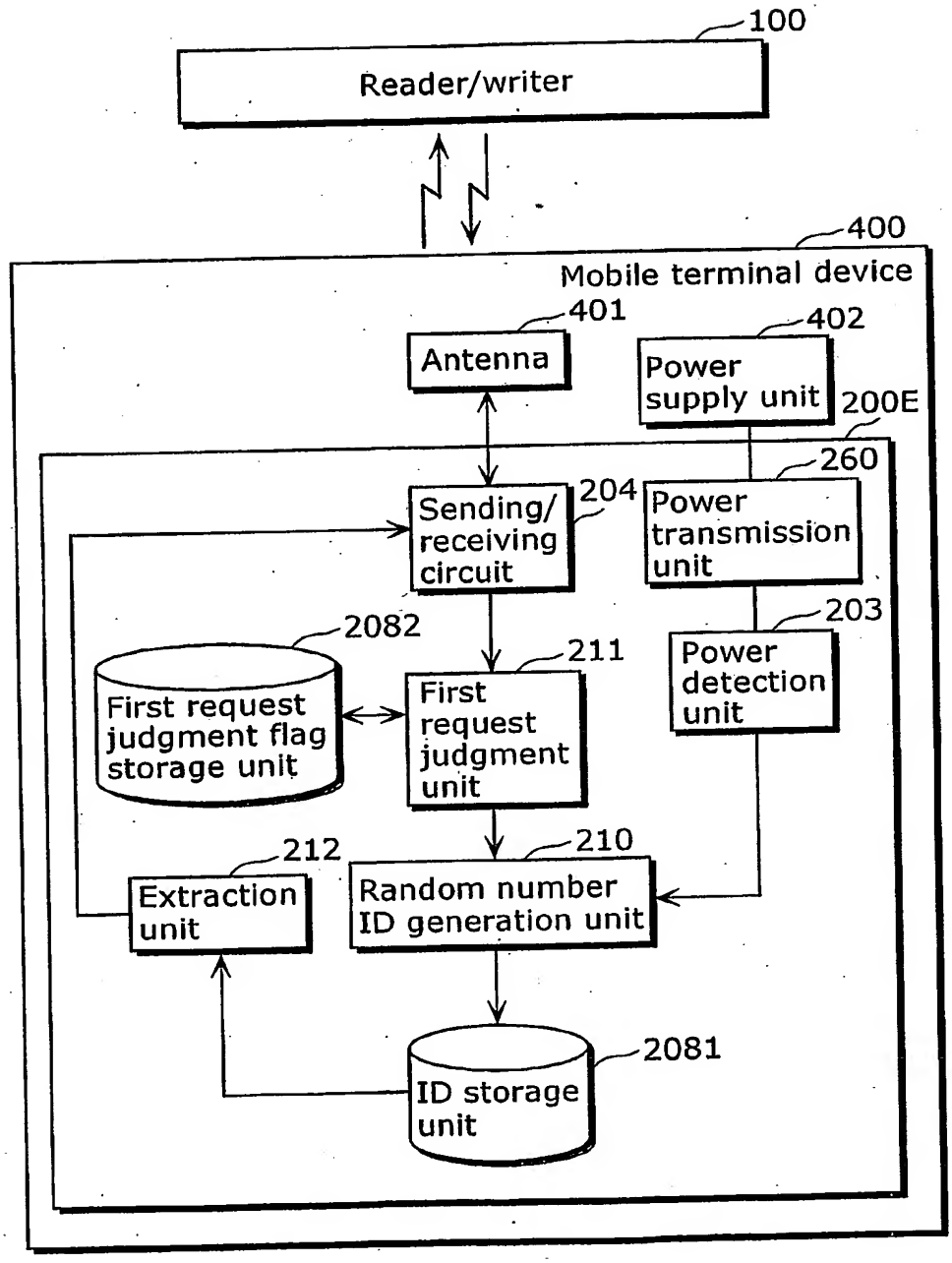

100
Reader/writer
400
Mobile terminal device
401
Antenna
402
Power supply unit
200E
260
Sending/ receiving circuit
204
Power transmission unit
203
2082
First request judgment flag storage unit
211
First request judgment unit
Power detection unit
212
Extraction unit
210
Random number ID generation unit
2081
ID storage unit

FIG. 23

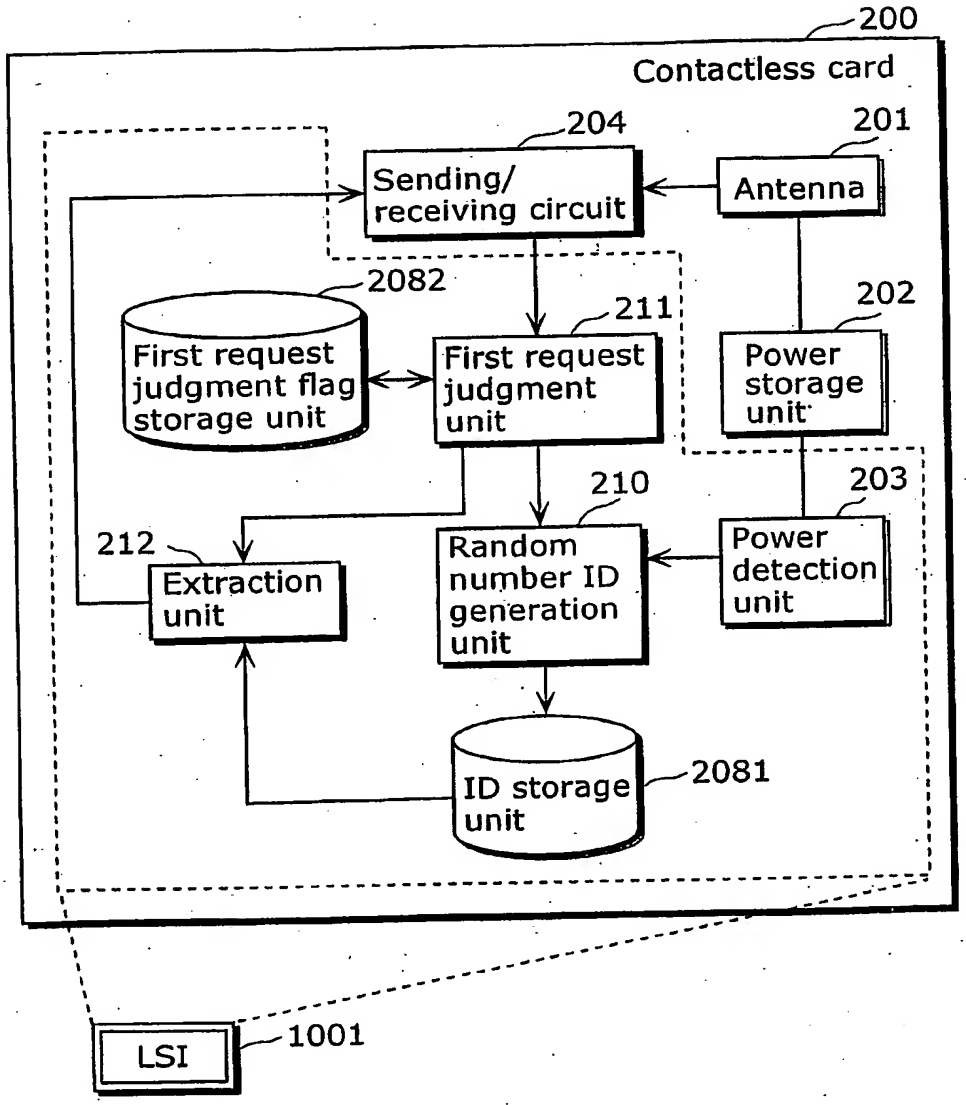
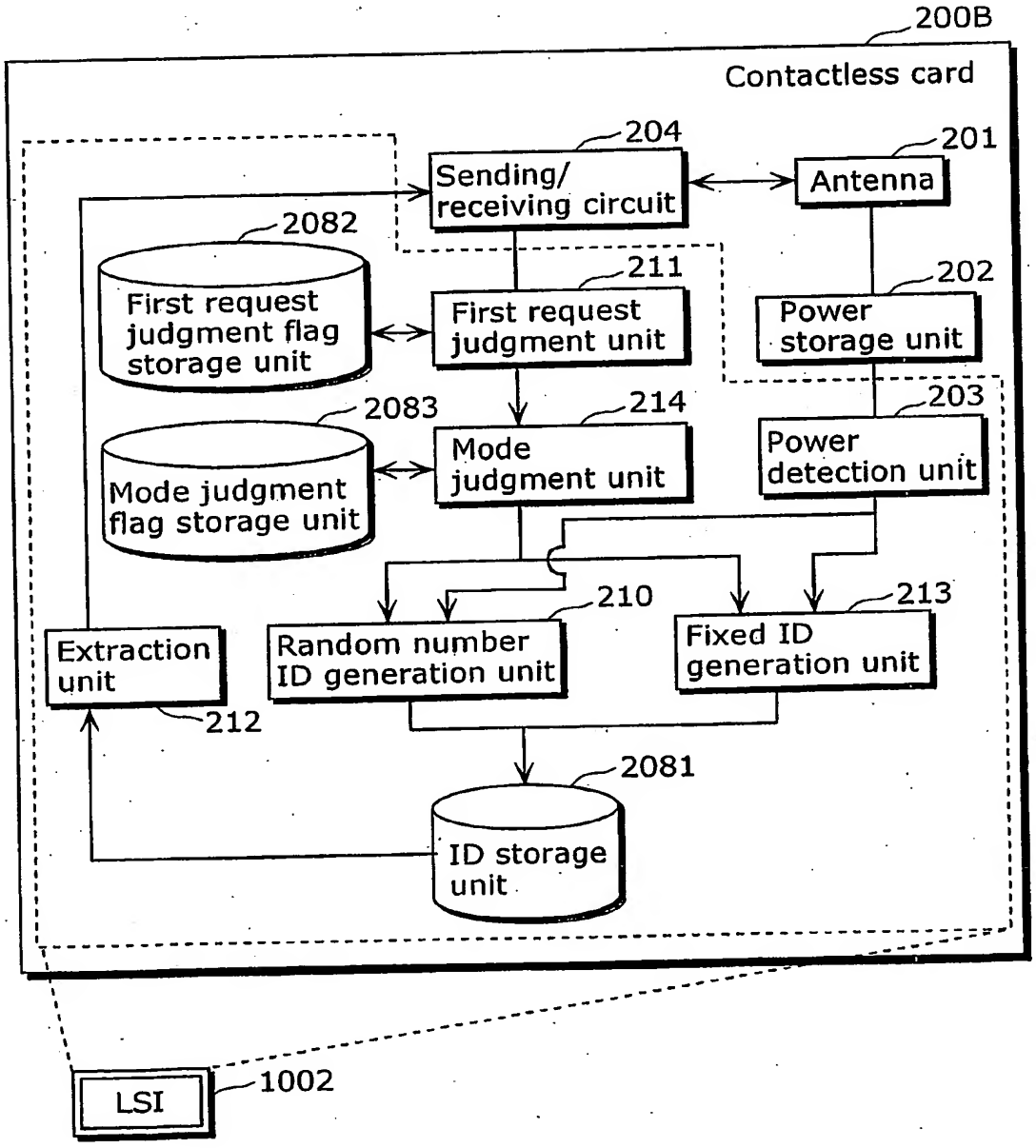

200
Contactless card
204
Sending/ receiving circuit
201
Antenna
2082
First request judgment flag storage unit
211
First request judgment unit
202
Power storage unit
210
203
212
Extraction unit
Random number ID generation unit
Power detection unit
ID storage unit
2081
LSI
1001

FIG. 24


200B
Contactless card
204
Sending/ receiving circuit
201
Antenna
2082
First request judgment flag storage unit
211
First request judgment unit
202
Power storage unit
2083
Mode judgment flag storage unit
214
Mode judgment unit
203
Power detection unit
210
213
Extraction unit
212
Random number ID generation unit
Fixed ID generation unit
2081
ID storage unit
LSI
1002

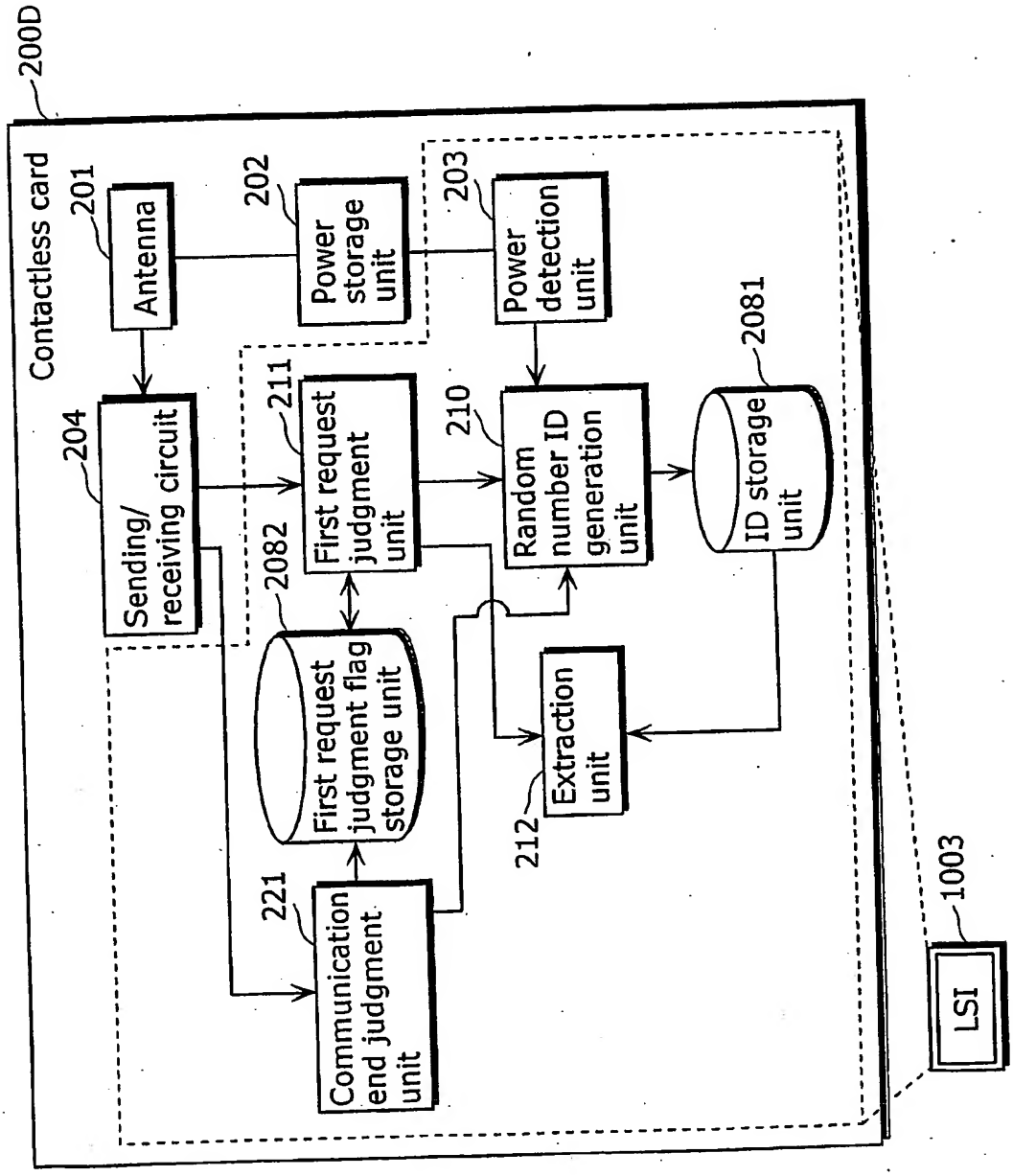

200D
Contactless card
201
Antenna
202
Power storage unit
203
Power detection unit
204
Sending/ receiving circuit
211
First request judgment unit
210
Random number ID generation unit
2081
ID storage unit
2082
First request judgment flag storage unit
212
Extraction unit
221
Communication end judgment unit
1003
LSI

FIG. 25